

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions of the claims and all prior listings of the claims in the present application.

Claims 1-86 (canceled)

Claim 87 (currently amended): A tyre for a vehicle wheel, comprising:
one or more components made of a crosslinked elastomeric material;
wherein at least one of the components comprises, as the crosslinked elastomeric material, an elastomeric polymer containing carboxylic groups crosslinked by reaction with an epoxidized liquid organic compound containing at least two epoxide groups located internally on the molecule, and
wherein the elastomeric polymer containing carboxylic groups is crosslinked substantially in an absence of additional crosslinking agents.

Claim 88 (previously presented): The tyre of claim 87, wherein the crosslinked elastomeric material comprises a reinforcing filler.

Claim 89 (previously presented): The tyre of claim 87, wherein an amount of the reinforcing filler is greater than or equal to 20 phr and less than or equal to 120 phr.

Claim 90 (previously presented): The tyre of claim 87, wherein an amount of the reinforcing filler is greater than or equal to 40 phr and less than or equal to 90 phr.

Claim 91 (previously presented): The tyre of claim 87, wherein the epoxidized liquid organic compound has an epoxide equivalent weight greater than or equal to 40 and less than or equal to 2,000.

Claim 92 (previously presented): The tyre of claim 87, wherein the epoxidized liquid organic compound comprises an epoxidized oil.

Claim 93 (withdrawn): The tyre of claim 87, wherein the epoxidized liquid organic compound comprises an epoxidized diene oligomer.

Claim 94 (previously presented): The tyre of claim 87, wherein the elastomeric polymer containing carboxylic groups is a homopolymer or copolymer containing at least 0.1 mol% of carboxylic groups relative to a total number of moles of monomers in the elastomeric polymer.

Claim 95 (previously presented): The tyre of claim 87, wherein the elastomeric polymer containing carboxylic groups is obtained by (co)polymerization of one or more conjugated diene monomers; optionally in admixture with monovinylarenes, polar comonomers, or monovinylarenes and polar comonomers; and subsequent carboxylation.

Claim 96 (previously presented): The tyre of claim 87, wherein the elastomeric polymer containing carboxylic groups is obtained by copolymerization between a conjugated diene; optionally in admixture with monovinylarenes, polar comonomers, or monovinylarenes and polar comonomers; and an olefinic monomer containing one or more carboxylic groups or derivatives thereof.

Claim 97 (withdrawn): The tyre of claim 87, wherein the elastomeric polymer containing carboxylic groups is obtained by copolymerization of one or more monoolefins with an olefinic comonomer containing one or more carboxylic groups or derivatives thereof.

Claim 98 (withdrawn): A tyre for a vehicle, comprising:

- a carcass structure;
- a belt structure extending coaxially around the carcass structure; and
- a tread band extending coaxially around the belt structure and having an external rolling surface intended to come into contact with the ground;

wherein the tread band comprises an elastomeric polymer containing carboxylic groups crosslinked by reaction with an epoxidized liquid organic compound containing epoxide groups located internally on a molecule of the organic compound, and

wherein the elastomeric polymer containing carboxylic groups is crosslinked substantially in an absence of additional crosslinking agents.

Claim 99 (withdrawn): The tyre of claim 98, wherein the tread band comprises a reinforcing filler.

Claim 100 (withdrawn): The tyre of claim 99, wherein an amount of the reinforcing filler is greater than or equal to 20 phr and less than or equal to 120 phr.

Claim 101 (withdrawn): The tyre of claim 99, wherein an amount of the reinforcing filler is greater than or equal to 40 phr and less than or equal to 90 phr.

Claim 102 (withdrawn): The tyre of claim 98, wherein the epoxidized liquid organic compound has an epoxide equivalent weight greater than or equal to 40 and less than or equal to 2,000.

Claim 103 (withdrawn): The tyre of claim 98, wherein the epoxidized liquid organic compound comprises an epoxidized oil.

Claim 104 (withdrawn): The tyre of claim 98, wherein the epoxidized liquid organic compound comprises an epoxidized diene oligomer.

Claim 105 (withdrawn): The tyre of claim 98, wherein the elastomeric polymer containing carboxylic groups is a homopolymer or copolymer containing at least 0.1 mol% of carboxylic groups relative to a total number of moles of monomers in the elastomeric polymer.

Claim 106 (withdrawn): The tyre of claim 98, wherein the elastomeric polymer containing carboxylic groups is obtained by (co)polymerization of one or more conjugated diene monomers; optionally in admixture with monovinylarenes, polar comonomers, or monovinylarenes and polar comonomers; and subsequent carboxylation.

Claim 107 (withdrawn): The tyre of claim 98, wherein the elastomeric polymer containing carboxylic groups is obtained by copolymerization between a conjugated diene; optionally in admixture with monovinylarenes, polar comonomers, or monovinylarenes and polar comonomers; and an olefinic monomer containing one or more carboxylic groups or derivatives thereof.

Claim 108 (withdrawn): The tyre of claim 98, wherein the elastomeric polymer containing carboxylic groups is obtained by copolymerization of one or more monoolefins with an olefinic comonomer containing one or more carboxylic groups or derivatives thereof.

Claims 109-132 (canceled)

Claim 133 (previously presented): The tyre of claim 87, wherein the elastomeric material is crosslinked at a temperature of at least 120° C for a time of at least 3 minutes.

Claim 134 (previously presented): The tyre of claim 87, wherein the elastomeric material is crosslinked at a temperature of at least 160° C for a time of at least 10 minutes.

Claim 135 (previously presented): The tyre of claim 87, wherein the epoxidized liquid organic compound has an epoxide equivalent weight greater than or equal to 50 and less than or equal to 1,500.

Claim 136 (previously presented): The tyre of claim 87, wherein the epoxidized liquid organic compound has an epoxide equivalent weight greater than or equal to 100 and less than or equal to 1,000.

Claim 137 (previously presented): The tyre of claim 92, wherein the epoxidized oil has a freezing temperature lower than 23° C.

Claim 138 (withdrawn): The tyre of claim 93, wherein the epoxidized diene oligomer comprises an average molecular weight (number average) greater than or equal to 500 and less than or equal to 10,000.

Claim 139 (withdrawn): The tyre of claim 93, wherein the epoxidized diene oligomer comprises an average molecular weight (number average) greater than or equal to 1,000 and less than or equal to 8,000.

Claim 140 (withdrawn): The tyre of claim 93, wherein the epoxidized diene oligomer is an epoxidized oligomer of 1,3-butadiene; isoprene; or 1,3-butadiene and isoprene.

Claim 141 (previously presented): The tyre of claim 94, wherein the elastomeric polymer containing carboxylic groups contains greater than or equal to 1 mol% of carboxylic groups and less than or equal to 30 mol% of carboxylic groups.

Claim 142 (currently amended): The tyre of claim 94, wherein the elastomeric polymer containing carboxylic groups has an average molecular weight (number average or weight average) greater than or equal to 2,000 and less than or equal to 1,000,000.

Claim 143 (currently amended): The tyre of claim 94, wherein the elastomeric polymer containing carboxylic groups has an average molecular weight (number average or weight average) greater than or equal to 50,000 and less than or equal to 500,000.

Claim 144 (previously presented): The tyre of claim 87, wherein an amount of the epoxidized liquid organic compound is greater than or equal to 5 parts-by-weight per 100 parts-by-weight of elastomeric polymer and less than or equal to 200 parts-by-weight per 100 parts-by-weight of elastomeric polymer.

Claim 145 (previously presented): The tyre of claim 87, wherein an amount of the epoxidized liquid organic compound is greater than or equal to 10 parts-by-weight per 100 parts-by-weight of elastomeric polymer and less than or equal to 120 parts-by-weight per 100 parts-by-weight of elastomeric polymer.

Claim 146 (previously presented): The tyre of claim 87, wherein the crosslinked elastomeric material comprises an amount of [[a]] condensation catalyst effective for increasing the crosslinking rate.

Claim 147 (withdrawn): The tyre of claim 98, wherein the elastomeric material is crosslinked at a temperature of at least 120° C for a time of at least 3 minutes.

Claim 148 (withdrawn): The tyre of claim 98, wherein the elastomeric material is crosslinked at a temperature of at least 160° C for a time of at least 10 minutes.

Claim 149 (withdrawn): The tyre of claim 98, wherein the epoxidized liquid organic compound has an epoxide equivalent weight greater than or equal to 50 and less than or equal to 1,500.

Claim 150 (withdrawn): The tyre of claim 98, wherein the epoxidized liquid organic compound has an epoxide equivalent weight greater than or equal to 100 and less than or equal to 1,000.

Claim 151 (withdrawn): The tyre of claim 103, wherein the epoxidized oil has a freezing temperature lower than 23° C.

Claim 152 (withdrawn): The tyre of claim 104, wherein the epoxidized diene oligomer comprises an average molecular weight (number average) greater than or equal to 500 and less than or equal to 10,000.

Claim 153 (withdrawn): The tyre of claim 104, wherein the epoxidized diene oligomer comprises an average molecular weight (number average) greater than or equal to 1,000 and less than or equal to 8,000.

Claim 154 (withdrawn): The tyre of claim 104, wherein the epoxidized diene oligomer is an epoxidized oligomer of 1,3-butadiene; isoprene; or 1,3-butadiene and isoprene.

Claim 155 (withdrawn): The tyre of claim 105, wherein the elastomeric polymer containing carboxylic groups contains greater than or equal to 1 mol% of carboxylic groups and less than or equal to 30 mol% of carboxylic groups.

Claim 156 (withdrawn): The tyre of claim 105, wherein the elastomeric polymer containing carboxylic groups has an average molecular weight greater than or equal to 2,000 and less than or equal to 1,000,000.

Claim 157 (withdrawn): The tyre of claim 105, wherein the elastomeric polymer containing carboxylic groups has an average molecular weight greater than or equal to 50,000 and less than or equal to 500,000.

Claim 158 (withdrawn): The tyre of claim 98, wherein an amount of the epoxidized liquid organic compound is greater than or equal to 5 parts-by-weight per 100 parts-by-weight of elastomeric polymer and less than or equal to 200 parts-by-weight per 100 parts-by-weight of elastomeric polymer.

Claim 159 (withdrawn): The tyre of claim 98, wherein an amount of the epoxidized liquid organic compound is greater than or equal to 10 parts-by-weight per 100 parts-by-weight of elastomeric polymer and less than or equal to 120 parts-by-weight per 100 parts-by-weight of elastomeric polymer.

Claim 160 (withdrawn): The tyre of claim 98, wherein the crosslinked elastomeric material comprises an amount of [[a]] condensation catalyst effective for increasing the crosslinking rate.

Claim 161 (previously presented): The tyre of claim 87, wherein the crosslinked elastomeric material comprises greater than or equal to 0.01 parts-by-weight of one or more condensation catalysts per 100 parts-by-weight of carboxylated elastomeric polymer and less than or equal to 5 parts-by-weight of the one or more condensation catalysts per 100 parts-by-weight of carboxylated elastomeric polymer.

Claim 162 (previously presented): The tyre of claim 87, wherein the crosslinked elastomeric material comprises greater than or equal to 0.1 parts-by-weight of one or more condensation catalysts per 100 parts-by-weight of carboxylated elastomeric polymer and less than or equal to 3 parts-by-weight of the one or more condensation catalysts per 100 parts-by-weight of carboxylated elastomeric polymer.

Claim 163 (previously presented): The tyre of claim 98, wherein the crosslinked elastomeric material comprises greater than or equal to 0.01 parts-by-weight of one or more condensation catalysts per 100 parts-by-weight of carboxylated elastomeric polymer and less than or equal to 5 parts-by-weight of the one or more condensation catalysts per 100 parts-by-weight of carboxylated elastomeric polymer.

Claim 164 (previously presented): The tyre of claim 98, wherein the crosslinked elastomeric material comprises greater than or equal to 0.1 parts-by-weight of one or more condensation catalysts per 100 parts-by-weight of carboxylated elastomeric polymer and less than or equal to 3 parts-by-weight of the one or more condensation catalysts per 100 parts-by-weight of carboxylated elastomeric polymer.